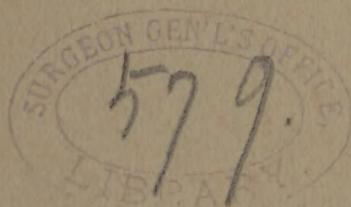


WRIGHT (J.)

Tuberculous Infection of the
Lymphoid Tissue in the Pharynx,
with some Remarks on
Laryngeal Infection.

BY
JONATHAN WRIGHT, M. D.,
BROOKLYN.

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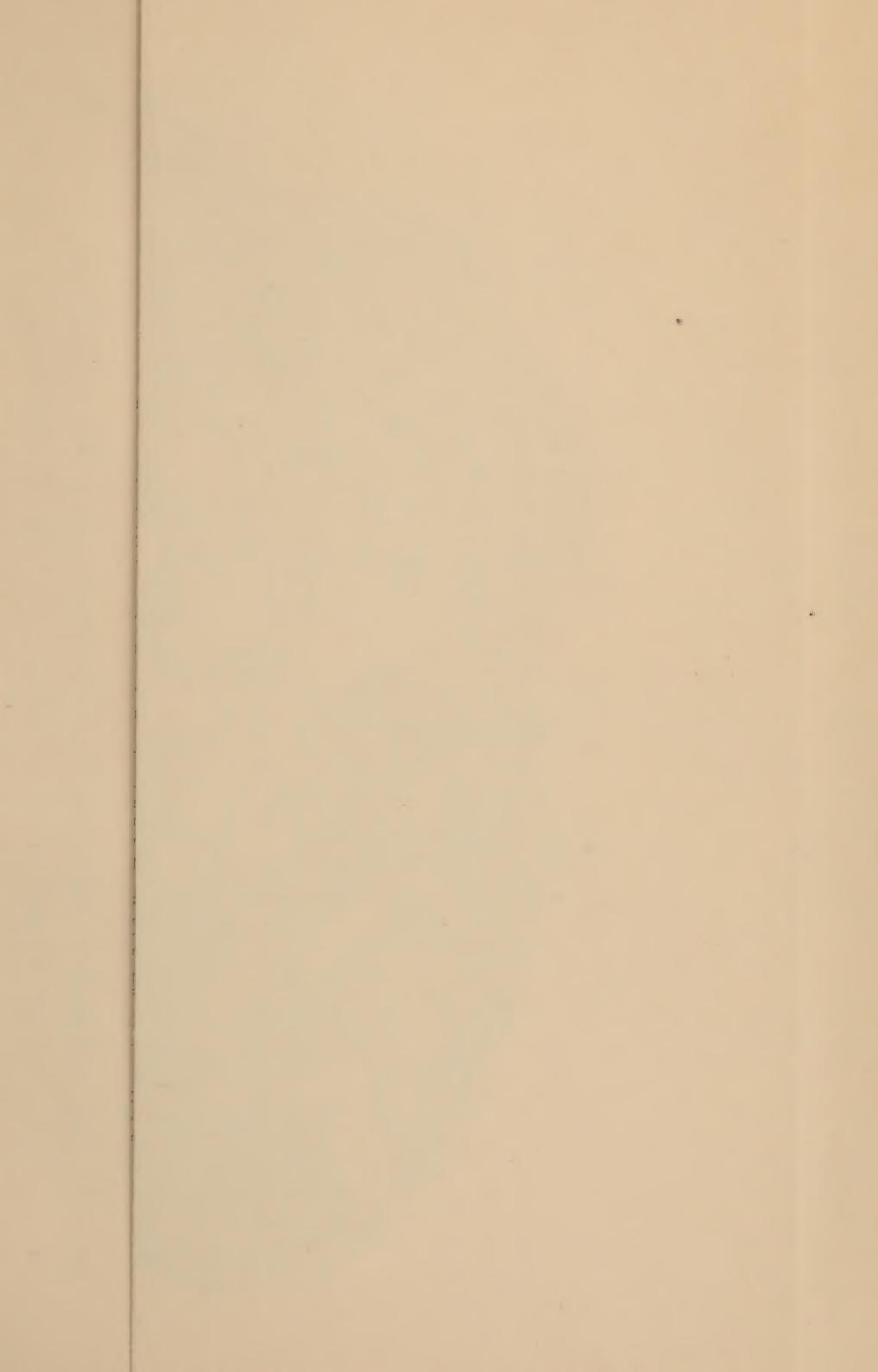




FIG. 1.

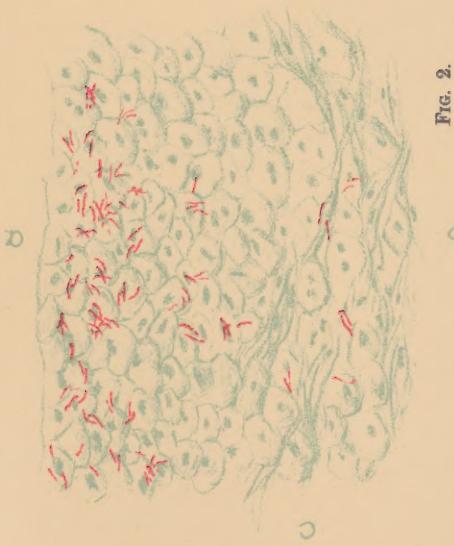


FIG. 2.

DR. WRIGHT'S ARTICLE ON TUBERCULOUS INFECTION OF
THE LYMPHOIDAL TISSUE OF THE PHARYNX.

TUBERCULOUS INFECTION OF
THE LYMPHOID TISSUE IN THE PHARYNX,
WITH SOME REMARKS ON LARYNGEAL INFECTION.*

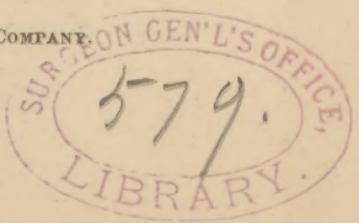
BY JONATHAN WRIGHT, M. D.,
BROOKLYN.

IN making the few remarks which follow, I do so as a sort of addendum to the paper which I hastily prepared last year for the discussion on tuberculosis of the upper air-passages by this association.

You may remember that I quoted a short abstract of a paper by Dieulafoy, of Paris, upon the lymphoid tissues of the throat as a tuberculous manifestation. In reading the paper † itself since then I found that his experimental evidence consisted of the following facts: In sixty-one guinea-pigs, he inoculated the peritoneal cavity with palatal tonsils from apparently non-tuberculous children. Of these, eight, or a little less than one in eight, contracted tuberculosis. In thirty-five guinea-pigs he inoculated lymphoid tissue from the nasopharynx in the same way, and seven of them, or one in five, developed tuberculosis.

* Read before the American Laryngological Association at its eighteenth annual congress.

† *Archives de laryngologie et rhinologie*, July and August, 1895.



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Lermoyez,* you will also remember, had previously reported two cases of tuberculosis following, and apparently dependent upon, operations for adenoids.

Dansac † had also made examinations of tonsils and found, as he claimed, evidences of tuberculous infection.

Now, if enlarged tonsils are tuberculous manifestations either in the oropharynx or in the nasopharynx, or if any considerable number of them, as above appears, really contain any tuberculous foci, laryngologists should know of it. Certainly we have been familiar with these growths for a long enough time to observe them carefully, and every laryngologist's observation has been wide enough to convince him that there must certainly be some mistake in the assertion that any considerable number are more than simple hypertrophies of pre-existing lymphoid elements.

Several years ago Massei, of Naples, wrote to me inquiring if I had ever found the tubercle bacillus in the healthy nose, and asking me to make inquiry of other observers. A well-known physician of Brooklyn, a skilled bacteriologist, at that time told me that he had found tubercle bacilli in his own nose, after a prolonged stay in the phthisical wards of one of our hospitals. He was and still remains, after a lapse of five or six years, a perfectly healthy man. This communication I forwarded to Massei with the statement of my belief that the bacilli would not infrequently be found to exist under such conditions in healthy noses and throats. Several years later, Strauss, in Paris, reported his examinations by which he showed that such is the fact. Massei

* *Annales des maladies de l'oreille*, etc., October, 1894.

† *Ibid.*, July, 1893, p. 564.

has lately published an address,* in which he says that inquiry among many laryngologists by a circular letter had elicited only a few answers, and in addition to my own, only one in the affirmative, from Liebermeister, to the question as to whether tubercle bacilli were found in healthy throats. This was in 1892, and Strauss's work was published in 1894. The investigations of Baumgarten, Sims Woodhead, Krückmann, and others prove pretty conclusively that the bacilli do get through the epithelium of the throat and into the cervical lymphatics in tuberculous subjects and in animals fed on tuberculous food. Were it not for clinical experience, therefore, and such investigations as those of Dr. Hodenpyl, it would seem extremely probable that the lymphoid tissues of the throat should contain tubercle. Dr. Hodenpyl † examined about two hundred sections for bacilli and found none, nor anything like tubercle in tonsils.

The matter standing thus, I determined to repeat some of Dieulafoy's experiments. On looking over the catalogue of the pathological specimens which I had examined microscopically in the last six or seven years, I found among them about sixty tonsils and adenoids. These had been hardened and stained in various ways and examined histologically with no special search for evidences of tuberculosis, but of the whole number, which must have consisted of several hundred sections, none had ever presented an appearance which had made me even think of tuberculous tissue. One or more slides from nearly all of these specimens had been preserved, and I again went over them for evidences of tubercle. Occa-

* Diagnosi e cura della tuberculosi della laringe. Estratto dal supplemento al *Policlinico*, anno ii, v. 5, 6.

† *American Journal of the Medical Sciences*, March, 1891, p. 257.

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sionally, in an area of recent inflammation of a tonsil a giant cell would be seen, but never perfectly typical. No "coagulation necrosis" or other evidence of tubercle could ever be found. These specimens had never been examined for bacilli, and most of them had been soaking so long in the alcohol that they would be useless for bacterial examinations. I took seven of the more recent celloidin blocks, however, and stained four sections from each for tubercle bacilli with Ziehl solution that was giving positive results with sputum and tuberculous tissue.

As the cases came into my clinics last winter for operation, tonsils and adenoids in unselected cases were cut out with sterile instruments. Half of each specimen was put in a sterile test tube, sometimes with and sometimes without sterilized water; and the other half was put in ten-per-cent. formalin for twenty-four hours, then in alcohol, ether, and celloidin, blocked, cut, and stained with Ziehl solution. The pieces in the sterilized tubes were sent to my friend Dr. W. H. Park, who put them into the peritoneal cavities and subcutaneous tissues of guinea-pigs. The number of these experiments was for faucial tonsils five, for postnasal "adenoids" seven. Of this series of experiments and examinations all resulted negatively. No bacilli of tubercle were found in the sections and no tubercle developed in the guinea-pigs, though three died of septicæmia.

Of course these few experiments, twelve in all, and negative in result, are not presented to refute Dieulafoy's more extensive work; but even had I obtained any positive results in the animal experiments, I should not have been able to say that I escaped the criticism which Cornil offered to Dieulafoy's work. Bacilli in his cases might

have existed in the crypts and on the surface of the tonsil and not in its structure. What I have said in regard to the presence of tubercle bacilli in normal respiratory passages adds force to this suggestion.

While these experiments were being carried on I was asked by Dr. Walter F. Chappell to see a case at the Manhattan Eye and Ear Hospital. He has kindly furnished me with a report of the history and a drawing of the clinical appearances in the case, taken from a paper read at the New York Academy of Medicine before the laryngological section, and published in the *New York Medical Journal* for September 19, 1896. On reference to his paper it will be noted that symptoms of tuberculosis of the nasopharynx followed within a week after operation for adenoids, the patient being exposed to infection by attendance on a sister dying of phthisis pulmonalis.

From the history, I am inclined to think that the patient already had a tuberculous focus in her nasopharynx at the time of the first operation. The supervention of the symptoms only a week afterward could hardly be attributed to primary tuberculous infection, as we do not get such a speedy reaction as this, even in guinea-pigs.

Dr. Chappell, however, I believe, is of the contrary opinion as regards this case. A piece of tissue was taken from the nasopharynx and given to me for examination, and upon it I was able to make the following report:

The specimen received from Dr. Chappell was a piece of tissue about ten millimetres in its long diameter and five millimetres in its short. Half of this was sent to Dr. W. H. Park, who inoculated two guinea-pigs with it. Dr. Park reports that one of the guinea-pigs died in

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twenty-one days of septicæmia, and showed in addition to this perfectly typical tubercle in the spleen and other organs, the tubercles containing bacilli. Four months later the second guinea-pig, which had presented signs of disease, was killed and found to be suffering from disseminated tuberculosis. The other half of the specimen was put in absolute alcohol, then in alcohol and ether, and imbedded in celloidin. Sections examined under a low power show a lymphoid tissue crowded with tubercle, presenting the picture shown in the plate (Fig. 1). Examined with higher power, the characteristic structure of tubercle with many giant cells may be seen, the areas of coagulation necrosis being shown as light spots in the drawing. Sections were stained for tubercle bacilli. A few were found in two or three sections out of about forty examined. The bacilli were never more than one to a tubercle granulum, situated usually in the centre of it, and sometimes in a giant cell.

Diagnosis.—Miliary tuberculosis of lymphoid tissue.

Thus it will be seen that the methods used in the twelve unsuspected cases, with negative results, gave a positive result in a case that was clinically perfectly apparent.

I have had colored drawings made, and you will note in Fig. 1 the striking appearance of the miliary tubercle under the low power (A *). I desire here to refer to a paper by Dr. Ricardo Botey in the *Archivos latinos de rinología*, etc., December, 1895, on Two Cases of Amygdalar Hypertrophy with Larval Tuberculosis.

His experiences resembled my own very much. He had also found giant cells in the section of a tonsil, but thought of them only as an inflammatory manifestation. In nineteen other tonsils, especially examined for them,

he found giant cells only in two, but never found the bacillus.

In two cases which he saw later he found the tubercle bacillus in tonsillar sections and got positive results by animal experiments, but in both these cases there was, to judge from the histories, ample evidence of pre-existing tuberculosis elsewhere. After this Botey inoculated ten guinea-pigs with tonsils from non-tuberculous cases and obtained negative results, except in one case which died of a pulmonary and splenic tuberculosis, but there was no tubercle at the site of inoculation. From his experiences he deduces the following conclusions:

“ 1. That there exist certain forms of amygdalar hypertrophy of a primary tuberculous character, impossible by simple inspection to distinguish from the common hypertrophy of those organs with which every one is familiar.

“ 2. This condition, which constitutes a kind of larval (*larrada*) tuberculosis in some cases and latent in others, is a serious menace to the organism and a danger for the future, more or less certain, according to circumstances.

“ 3. This larval tuberculosis of the tonsils is present, especially in adolescence, without the least pulmonary or intestinal lesion which would make us suspect the evil.

“ 4. In some rare cases it is possible to diagnosticate it in time, with the help of the microscope and of inoculations.

“ 5. It is probable that the majority of the cases of hypertrophic amygdalitis are not tuberculous, for although in our experiments there occurred ten per cent., nevertheless, we do not know the proportion of one to the other, and simple ocular inspection reveals nothing.

" 6. This does not signify that all the cases of larval amygdalar tuberculosis, even supposing that they are diagnosticated opportunely, are surely followed by different cervical adenopathies, terminating in a pulmonary phthisis. On the contrary, it is probable that in many cases everything subsides into ganglionary infarcts without the tubercular germs reaching later the pulmonary parenchyma," etc.

As for my own impressions in this matter: In spite of the recent evidence here presented, I am inclined, both from clinical and pathological evidence, to agree with Dr. Hodenpyl when he says that tuberculous amygdalitis is a rare affection, and that the tonsils are rarely the seat of primary inoculation.

Considering the chances of primary, and especially of secondary infection, it certainly is rather remarkable that these structures should escape so constantly as they do. Moreover, tubercle bacilli have been found in the bronchial and mesenteric glands of apparently non-tuberculous people. They have been shown to exist in these lymphatic structures by animal inoculation when they could not be demonstrated by the microscope. That the same thing should be demonstrated in tonsils should not be a matter for surprise, but we should expect it to occur more frequently than appears.

I want to take this opportunity of presenting a drawing of a section which is more directly connected with the subject of tubercular invasion of the larynx than of the lymphoid tissues, and I have had a colored drawing made on stone for the same plate as the drawing of the tuberculous lymphoid structure.

The question of tubercle bacilli penetrating through epithelial structures has frequently been discussed, and

very frequently such penetration has been denied. Last fall, in examining sections from papillomatous tissue removed from a tubercular larynx in a patient far advanced in pulmonary and laryngeal phthisis, I met with the picture which you see reproduced on the plate in Fig. 2.

You will note that a veritable stream of tubercle bacilli is pouring into and through the thickened, squamous epithelial covering of the laryngeal mucous membrane. The epithelial cells are swollen and cloudy. The evidence of the penetration of tubercle bacilli through epithelial cells is here perfectly apparent. It is said by Lake * and others that pyogenic cocci first create shallow ulcers through which the tubercle bacillus finds its way. This would appear not to be the case in this specimen.

As to whether the tubercle bacillus can penetrate the normal laryngeal epithelium of a healthy individual, it may still be considered a matter of some doubt.

This laryngeal case of mine ran the ordinary course of pulmonary and laryngeal tuberculosis, and terminated fatally, I should think, in about nine months. The case of Dr. Chappell's was more rapid, terminating in less than six months with general tuberculosis.

In the latter case the lymphoid tissue contained so few bacilli, notwithstanding the large amount of tubercle, that it required prolonged search through many sections to find even one. The enormous number in the epithelium from the larynx made a striking contrast. It is impossible at present to explain the difference. The results produced by the infecting organisms in the two cases bear no proportion to their numbers, and this fact is a good one to bear in mind in watching the results of the researches into the real ætiology of tuberculous infection.

* *American Journal of the Medical Sciences*, 1895, i, cix, p. 407.

The New York Medical Journal.

A WEEKLY REVIEW OF MEDICINE.

EDITED BY

FRANK P. FOSTER, M.D.

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